V.A.5.N.d.17. MUHLENBERGIA MONTANA HERBACEOUS ALLIANCE

Mountain Muhly Herbaceous Alliance

MUHLENBERGIA MONTANA - HESPEROSTIPA COMATA HERBACEOUS VEGETATION

Mountain Muhly - Needle-and-Thread Herbaceous Vegetation

ELEMENT CONCEPT

GLOBAL SUMMARY: This association has been described from north-central and central Colorado, in the northeastern portion of the Roosevelt National Forest and Florissant Fossil Beds National Monument. The association may also occur in Rocky Mountain National Park in the Mummy Range. Sites where the association is found are typically xeric forest openings in the ponderosa pine zone, on south-facing slopes and ridgetops. Elevations range from 2286 to 2590 m (7500-8500 feet), and the slopes are moderately steep. Occasionally the association occupies rolling parklands. Strong, westerly winds probably result in removal of snow cover from the open sites and increased desiccation of plants. Soils are moderately deep Mollisols, with high coarse fragment content, sandy loam textures, and a distinct clay horizon. Parent materials are primarily colluvium of granitic and gneiss origins. Bare soil, exposed gravels, and small rocks account for as much as 30% of the ground surface area. This grassland association is strongly dominated by the perennial bunch grasses *Muhlenbergia montana* and *Hesperostipa comata (= Stipa comata)*, averaging 11% and 22% cover, respectively. Several other graminoids are commonly present, including *Carex duriuscula (= Carex eleocharis), Pascopyrum smithii, Koeleria macrantha, Danthonia parryi, Muhlenbergia filiculmis*, and *Poa secunda*. Total graminoid cover averages 45%. Forb species are much less abundant, totaling <10% cover. The most important include *Allium geyeri, Antennaria rosea, Arenaria fendleri, Harbouria trachypleura, Mertensia lanceolata*, and *Penstemon secundiflorus*. Shrubs are absent or scarce, except for the suffrutescent *Artemisia frigida*, with 5% average cover. This association can be distinguished from *Muhlenbergia montana* Herbaceous Vegetation (CEGL001646) by the abundance to co-dominance of *Hesperostipa comata.*

ENVIRONMENTAL DESCRIPTION

USFWS Wetland System: Upland

Florissant Fossil Beds NM Environment: Only one dense stand of this herbaceous vegetation, covering approximately 200 m^2 on a Pikes Peak granite-derived gravel toeslope, was observed north of Boulder Creek. The remaining stands were smaller and less dense, not much more than patches, but in a similar topographic position, e.g., on toeslopes or ridges. The aspect ranged from 164-227 degrees, and the slopes are moderately steep, from 14–17%. Stands occur between approximately 8250 feet to 8450 feet in elevation within the Boulder Creek valley.

Global Environment: This type occurs in a mountainous region subject to a continental climate regime, with warm summers and cold winters. Precipitation patterns differ between the eastern and western sides of the Continental Divide, but the overall difference is warmer and drier winters on the east slope of the Front Range. Sites where found are typically xeric forest openings in the ponderosa pine zone, on south-facing slopes and ridgetops. Elevations range from 2286 to 2590 m (7500-8370 feet), and the slopes are moderately steep. Occasionally the association occupies rolling parklands. Strong, westerly winds probably result in removal of snow cover from the open sites and increased desiccation of plants. Parent materials are primarily colluvium of granitic and gneiss origins. Soils are moderately deep Mollisols, with high coarse-fragment content, sandy loam textures, and a distinct clay horizon. Bare soil, exposed gravels, and small rocks account for as much as 30% of the ground surface area.

VEGETATION DESCRIPTION

Florissant Fossil Beds NM Vegetation: A small stand and patches of this herbaceous vegetation are present north of Boulder Creek, on toeslopes and midslopes of ridges and small hills. *Hesperostipa comata* is a medium-height bunchgrass, from 0.5–1.0 m tall and provides from 2–5% foliar cover in most patches. However, in one relatively dense stand, needle-and-thread provided approximately 30% foliar cover. Total foliar cover for this stand ranged from 55–70%, with most provided by grass species, particularly *Muhlenbergia montana, Bouteloua gracilis*, and *Muhlenbergia filiculmis* in addition to *Hesperostipa comata*. *Artemisia frigida* was present in one stand, at less than 5% foliar cover. Forb species common to the stand included *Geranium caespitosum* and *Grindelia subalpina*. The ground cover was evenly split between Pikes Peak granite-derived gravel and litter.

The small stand is well below the minimum mapping unit and resembles *Festuca arizonica - Muhlenbergia montana* stands on aerial photographs.

Global Vegetation: This grassland association is strongly dominated by the perennial bunch grasses *Muhlenbergia montana* and *Hesperostipa comata (= Stipa comata)*, averaging 11% and 30% cover, respectively. Several other graminoids are commonly present, including *Carex duriuscula (= Carex eleocharis), Pascopyrum smithii, Koeleria macrantha, Danthonia parryi, Muhlenbergia*

filiculmis, and *Poa secunda*. Total graminoid cover ranges from 55-70%. Forb species are much less abundant, totaling <10% cover. The most important include *Allium geyeri, Antennaria rosea, Arenaria fendleri, Harbouria trachypleura, Mertensia lanceolata*, *Geranium caespitosum, Grindelia subalpina,* and *Penstemon secundiflorus*. Shrubs are absent or scarce, except for the suffrutescent *Artemisia frigida*, with 5% average cover.

Global Dynamics:

MOST ABUNDANT SPECIES

Florissant Fossil Beds NM

Stratum	Species
Dwarf-shrub	*Artemisia frigida*
Graminoid	*Hesperostipa comata, Muhlenbergia montana, Muhlenbergia filiculmis, Bouteloua gracilis*
Forb	*Geranium caespitosum, Grindelia subalpina*

Global

Stratum	Species
Graminoid	*Hesperostipa comata, Koeleria macrantha, Muhlenbergia montana, Pascopyrum smithii Poa secunda*

CHARACTERISTIC SPECIES

Florissant Fossil Beds NM

Stratum	Species
Graminoid	*Hesperostipa comata, Muhlenbergia montana, Muhlenbergia filiculmis, Bouteloua gracilis, Carex inops* ssp. *heliophylla*
Forb	*Geranium caespitosum*

Global

Stratum	Species

OTHER NOTEWORTHY SPECIES

Florissant Fossil Beds NM

Global

Stratum	Species

GLOBAL SIMILAR ASSOCIATIONS:
Muhlenbergia montana - Heterotheca villosa Herbaceous Vegetation (CEGL002938)
Muhlenbergia montana Herbaceous Vegetation (CEGL001646)

SYNONYMY:
- DRISCOLL FORMATION CODE: V.B.4.b. (Driscoll et al. 1984)
- *Muhlenbergia montana-Stipa comata* (Bourgeron and Engelking 1994)
- UNESCO FORMATION CODE: V.B.5b (UNESCO 1973)

GLOBAL STATUS AND CLASSIFICATION COMMENTS

Global Conservation Status Rank: G1G2.

Global Classification Comments:

ELEMENT DISTRIBUTION

Florissant Fossil Beds NM Range: The *Muhlenbergia montana - Hesperostipa comata* Herbaceous Vegetation stand is extremely small and only observed on south-facing rides and toeslopes along the north side of Boulder Creek, west of the Hornbek Homestead.

Global Range: Association described from north-central Colorado, primarily within the northern portion of the Front Range in Larimer County and farther south along the Front Range in Teller County.

Nations: US
States/Provinces: CO

ELEMENT SOURCES

Florissant Fossil Beds NM Inventory Notes: Plot 86
Classification Confidence: 2 **Identifier:** CEGL001647

REFERENCES: Baumann 1978a, Bourgeron and Engelking 1994, Buttery 1955, Driscoll et al. 1984, Fish 1966, Hess 1981, Mutel 1976, UNESCO 1973